

## FOR TIMEX/SINCLAIR ENTHUSIASTS

PUBLISHED BY WMJ DATA SYSTEMS

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## From the Desk of Bill Johnson

Sinclair Research has lowered its price to \$299 on the Sinclair QL computer, see page 16 for details. For this low price you get not only the QL but also four of the most used software packages: Word Processor, Data Base, Spreadsheet and Graphics package. Within 10 minutes you can have the QL hooked-up and working for you, you need nothing else. Many people have noticed that Sinclair does not supply a Centronics Parallel interface for the QL, the QL has two built-in RS232 ports. Since most people have Centronic printers they are concerned. We have found a source for a Centronics interface: CURRY COMPUTERS, PO Box 5607, Glendale, AZ 85312-5607 Tel.: 1-602-978-2902. They have the Kempston Centronics Interface for \$29.95 plus \$1.00 Shipping. The Curry's probably have the best offering of QL items in the U. S., they have been supporting the QL for almost one year now. For people who wanted a disk drive for the QL the Curry's also have a Kempston Disk Interface.

Another important development about the QL is that Sinclair Research now allows dealers to also sell them. Earlier this year when the QL was released you could only purchase a QL through Sinclair directly. Now that dealers are allowed to sell the QL the market should open up. More and more items should start to be developed and imported for the QL. The future looks bright for the Timex/Sinclair community.

Many subscriptions expired with our last issue. This was QTS's first real test of how well we are doing. As of today, January 3, we have received an 85% return on renewals. This figure shows that we are on the right track. I would like to thank all of the people who took the time to write down comments or suggestions. All of these have been read and will be considered. It seems that most of our readers have both the TS1000 and TS2068 computers, and that once a Sinclair user always a Sinclair user. Some readers stated that we should have more on the TS1000 and others stated they wanted more on the TS2068. We can't please all of our readers all of the time, but we will try. As you may notice this issue is mostly on the TS2068. This is not by choice but we received a large number of articles and reviews on the TS2068, we still have many on file. While we do receive articles on the TS1000 we do not receive as many. This shows a trend by most of our readers to be more interested in the TS2068. Please be assured that the TS1000 will still be covered in QTS, as soon as you send in some articles and reviews. We also have had many requests for back issues of QTS. At this time we only have a supply of the Fall 1985 issue, which we had extra printed up to give out as samples. By the next issue we should have back issues available, most likely all four of the 1985 issues in one package. Until next time...

Dear QTS:

I am a subscriber to your fine publication and would like to thank you for publishing it. I have a TS2068 and find the programs very useful. I haven't seen any information/tips etc., on the ZX Micro drives and ZX Interface I that I use with my T/S. Other hardware seems to get alot of attention, how about evening it up a little? They're fine products and are deserving of more attention.

I am not sure when my current subscription will end, can you give me this information so that I don't miss any issues.

Yours Truly,  
R. L. Pace  
No. Hollywood, CA

Dear Robert:

Thanks for the kind words on QTS and for letting us know what you want to see. Without reader feedback it would be difficult to come up with new ideas.

As you realise it is impossible for us to have every piece of hardware or software in our hands. If you look at prior issues you will notice that most of our articles come from many different authors, most of whom are subscribers of QTS. What I can suggest to you and to other readers is that if you have a product that you like or dislike write a review and send it to us. If possible why not write a review on the Microdrives and share your pleasure with other readers. As more people use the Microdrives I am sure that we will receive many tips.

You will be notified by us when it is time to renew your subscription to QTS. In the upper right hand corner of your mailing label is the last issue you will receive.

Sincerely,  
Bill Johnson

## VAL\$ ANSWERED

In the FALL-85 issue a question by Paul Meyer was asked concerning the VAL\$ command. I would like to thank everyone who sent in an answer, they are all appreciated. Here are a few letters that we received concerning VAL\$:

Here is an answer sent by Roald A. Schrack, which appeared in the November 1985 issue of the Capitol Area Timex Sinclair Group's newsletter:

If you are like me, you have never used the VAL\$ function. There is no good explanation in any of the manuals. the "Quick Reference Guide" states that the function evaluates a numeric expression without its bounding quotes as a string expression. This is only a partial truth. The function can be used on any string expression - numerical or alphabetical. it will remove one level of " " marks from any string expression. As an example let A\$="cats" and then let B\$="A\$". The string "cats" is two levels down so to speak. Equivalently we could have written ""cats"". the following exercises demonstrate the application of VAL\$.

```
10 LET a$="""1+2"""  
20 PRINT a$  
30 PRINT VAL$ a$  
40 PRINT VAL$ VAL$ a$  
50 LET b$="""1+2"""  
60 PRINT b$  
70 PRINT VAL$ b$  
80 LET c$="b$"  
90 PRINT c$  
100 PRINT VAL$ c$  
110 PRINT VAL$ VAL$ c$  
120 PRINT VAL VAL$ VAL$ c$
```

This program will printout the following:

```
""1+2""  
"1+2"  
1+2  
"1+2"  
1+2  
b$  
"1+2"  
1+2  
3
```



Note the relative number of quotes in lines 10 and 50.

More examples for the advanced student:

```
10 LET a$="1+2"
11 LET g=4
12 LET h$="g"
13 LET j$="h$"
15 LET b$=""1+2""
16 LET c$="a$"
17 LET d$="c$"
18 LET e$="cats"
19 LET f$="small ""dogs"" are
nice"
20 PRINT VAL a$
30 PRINT VAL$ b$
40 PRINT VAL$ c$
50 PRINT VAL VAL$ c$
60 PRINT VAL$ d$
70 PRINT VAL$ VAL$ d$
80 PRINT VAL$ "e$"
90 PRINT e$
100 PRINT f$
110 PRINT f$(7 TO 12)
120 PRINT f$(8 TO 11)
130 PRINT VAL$ f$(7 TO 12)
140 PRINT g
150 PRINT VAL h$
160 PRINT VAL (VAL$ j$)
170 PRINT VAL$ j$+b$
180 PRINT VAL VAL$ j$+VAL VAL$
b$
```

The above program generates the following:

```
3
1+2
1+2
3
a$
1+2
cats
cats
small "dogs" are nice
"dogs"
dogs
dogs
4
4
4
g"1+2"
7
```

There must be some tricky applications for VAL\$, but I haven't thought of them yet - can you?

Dear QTS:

Here is an example of how VAL\$ works that Paul Meyer asked about in the current QTS. The BETA SOFT enhanced BASIC for the Spectrum or 2068 with an emulator has a version of this that actually allows strings to be used for self-writing programs. It is called BETA BASIC 3.0 and is available through English Micro Connection. Keep up the good work in supporting the TS user!

Best Regards,  
Robert D. Hartung  
Huntertown, IN

Comparison of VAL and VAL\$ functions, showing VAL a\$ as giving the numeric result of an expression in a\$, while VAL\$ a\$ gives the literal string that makes up a\$.

```
5 REM Circular Area
10 INPUT "Radius R? ";R
20 DEF FN A(R)=(R^2*PI)
30 LET a$="R^2*PI"
40 PRINT "VAL$ a$ =",VAL$ "a$"
50 PRINT "FN A(R) =",FN A(R)
60 PRINT "VAL a$ =",VAL a$
```

Dear QTS:

I am enclosing an article from ZX COMPUTING. It contains the following passage about the use of the VAL\$ command:

"VAL\$ is a Spectrum function which was added to the ROM as much because it was easy to add as for any function it can perform. It takes a string and evaluates its contents as an expression, just like VAL, the difference is that it gives an error if the answer is numeric, only working if the result is also a string. This can lead to the original string needing a large number of repeated quotation marks to ensure that the final result is still a string."

Best Wishes,  
Dr. A. Drucker  
Fresh Meadows, NY

Dear QTS:

I have enjoyed your publication and was happy to find it after being abandoned by Timex (and SYNC) in such a cavalier fashion. The following are just some thoughts (I have both the TS1000 and TS2068):

(1) Is there anyway to load TS1000 tapes into the TS2068?

(2) The 2040 printer works with either machine - what about other peripherals? Specifically, I have a plug-in circuit for receiving & sending Morse Code (CW) for the TS1000; will it work without modification on the TS2068? (There's a program that goes with it-which relates to the first question).

(3) Was interested in "Telecommunications" column discussing modems. I take it that you just plug the modem into the expansion port and into the phone jack. How about an article on what you do then. do you get on the line using the telephone or computer? for accessing BBS's I gather that you use the numbers given in Bill's last column. Telephone charges are the same as if you were talking on the phone to these numbers, I assume? Can you access a service like Compuserve locally or do telephone charges vary depending on the source of information wanted? These are the kind of questions that bug me.

(4) In a similar manner: What goes into adding a disk drive? Is it worth the expense for the hobbyist? What's the best disk? Best drive? Costs? Where to find? Other information.

I don't expect a personal answer, but there must be thousands like me kind of winging it alone and who have all but given up on Timex/Sinclair.

E. F. Davis  
3028 Ramona St  
Palo Alto, CA 94306

Dear E. F. Davis:

It's great to receive a letter like yours. Most letters received by us

QTS Winter 1986

are usually not explicit enough for us to give a good answer. We get questions like: How can I program better in BASIC? Now how can someone answer that? Now to answer your questions.

(1) As long as a program is written in BASIC it can be typed directly into the TS2068 by hand. If there are POKes in the program you must change them to the correct TS2068 POKes. If you have alot of programs that you want transfered into TS2068 BASIC I would recommend the UPLOAD 2000 available from: E-Z KEY, Suite 75A, 711 Southern Artery, Quincy, MA 02169. It goes for \$19.95 + \$1.95 S&H. I would also recomend getting the loading filter for use with this program, it makes the programs load more reliably, it goes for \$9.95. These items are also available from other dealers. If your programs have Machine Code routines you must translate them for use on the TS2068, no easy task.

(2) Both the TS1000 and TS2068 have the same expansion ports. Devices such as the 2040 printer or a modem will plug in to either of the computers. When you mentioned the software you hit the nail on the head. In order for any device to work on one of the computers the software must tell the computer what to do with the device. Since I am not familiar with the circuit you mentioned I have no idea if it will work on the TS2068. Even if the software is in BASIC it may not be able to be used on the TS2068 without a major overhaul. I printed your address above so if one of our readers thinks he can help you he or she can write to you.

(3) Please see the TELECOMMUNICATIONS column for the answers to your questions. Thanks for the ideas!

(4) See the FALL-85 and this issue of QTS for reviews on Disk Drives.

Sincerely,  
Bill



**TIMEX TIPS**  
by Chuck Dawson

**QUESTION:** I own a Timex 1000 with memory expansion modula 1016 and I have understood that the memory addresses are limited to something less than 36,000. However, I have found that I can store and execute machine code from addresses up around 50,000. I realize that some peculiarity of the addressing of the buss causes the apparently impossible addresses to function. Can you tell me where these instructions are actually stored and why?

**ANSWER:** Thank you for your good question! You were on the right track when you mentioned the addressing of the buss. you see, when the ZX-81 was first designed, it was assumed that no one would ever sue more memory than 16K. Therefore, only partial address decoding was provided for; up to 32,767. The most significant bit (that would have allowed addressing up to 65,535) was ignored. In Basic, the system variable RAMTOP is set up at initialization and keeps the Basic system from using any address above RAMTOP. However, when you are using machine code, nothing keeps the computer from trying to write to (POKE) or read (PEEK) any address, even if it does not exist.

What is actually happening is this: If you POKE a value into the address 64,000, the number actually goes into location 31232 (32768 lower). This is because the binary bit pattern for those two addresses is the same except for the most significant bit, which the computer ignores anyway. So, if you POKE numbers into some non-existent high locations, they are actually residing 32768 locations lower. Note that the 64K memories (sold by companies other than Sinclair or Timex) have built in circuitry to decode that MSB and make available for use those upper 32768 bytes.

**QUESTION:** I like to put machine code in a REM statement at the beginning of a program (TS2068) so that it

will load along with the rest of the program. I don't like the fact that it keeps my program from LISTing properly. Usually, I can't get any of the program to list after line 1. Any ideas?

**ANSWER:** Sure! Put the machine code in the last line instead of the first. But now we have created a couple of new problems. First, we don't know the exact location of the last line like we do the first line. And second, the code moves around whenever lines are added or deleted so the code has to be written with only relative jumps. Usually, machine code routines that I plan to store in REM lines are fairly short, and I always use relative jumps where I can anyway.

But how do we find the location of the code so we can run it with the USR function? Well, if it is the last line, then the next thing that follows is the variables, which are pointed to by the system variable VARS. All we have to do is place the following line in the program somewhere before the first USR call:  
LET VARS=PEEK 23627+256\*PEEK 23628:  
LET LOC= (VARS-2)-code length. You fill in the code length and this must include any extra characters in the REM if you made it a little longer than needed. Now just RANDOMIZE UNS LOC whenever you want to call the routine. The program will list normally down to the last line.

**QUESTION:** I understand the Commodore 64 computer has a built-in clock that can be set by POKEing in half a dozen values prior to running a program, and the time can be accessed to interrupt a program. Does the TS2068 have this feature?

**ANSWER:** Yes, and you only have to POKE three values. The "clock" is updated 60 times each second at location 23672. When this number reaches 255 (about four and a quarter seconds), it is reset to zero and the number in location 23673 is incre-

mented. When it reaches 255 (about 18 minutes), it is set to zero and the number in location 23674 is incremented. That gives us over 77 hours before the clock repeats. The easiest way to use the "clock" is to POKE the three locations with 0 at the beginning of your program. That way you start at a known value of zero.

Now, let's say you want the program to loop doing some task until 25 minutes have passed, and then branch to an alarm routine. Somewhere in the loop place the following line:

```
IF PEEK 23672 + 256 * PEEK 23673 +
65536 * PEEK 23674 > 90000 THEN GOTO
3000
```

The number 90000 is calculated by 60. Us the ">" sign instead of equals because the chances of the program calculating the value at the moment it is exactly equal to 90000 is pretty small.

Another variation on this theme might be a game that several people play, each trying to beat the other's best time. Again set the three clock locations equal to zero at the beginning of the game and then at the end, calculate the seconds used by the following line:

```
LET SECONDS = INT((PEEK 23672 + 256 *
PEEK 23673 + 65536 * PEEK 23674)/60)
```

By the way the "clock" is stopped during SAVE and LOAD.

QUESTION: I know that if a number is calculated and the result is a whole part and a line of digits after the decimal point, I can strip away the fractional part with INT. But I want whole numbers and two digits after the decimal (like dollars and cents). How can I do this?

ANSWER: Easy! Just multiply the number by 100, take the INTEger part and divide the answer by 100. Let's say the answer to your calculation is contained in the variable A. Just add the following line to you program prior to printing:

```
LET A = .01 * INT(100 * A)
```

You may want to round the answer to the nearest cent. In that case the line would look like this:

```
LET A = .01 * INT(.5 + 100 * A)
```

I hope this helps. Good Luck!

NOTE: If you have a question that you want answered by Chuck Dawson please write him C/O WMJ DATA SYSTEMS, 4 Butterfly Dr, Hauppauge, NY 11788. Please include a SASE if you want a personal reply.

QTS

# SUM MAGAZINE

ZX-81 TS-1000 TS-1500 TS-2068 Spectrum

SUM Magazine is aimed at Timex/Sinclair owners who want to do more with their computers, to know what is new and what is just over the horizon. Articles in recent issues included: Building Your Own Printer Interface; Disk Drive and Watadrive Reviews; Hi-Res Graphics for the TS-1000; and a Beginner's Programming Series.

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REVIEW: DISK DRIVE by TIMEX  
of PORTUGAL  
by Chuck Dawson

DESCRIPTION: A complete disk drive system for the TS2068. Uses 3" disks and comes with one disk, power supply, operating system disk, all cables, disk controller, TS2068 interface, manual and demo programs on disk.

MANUFACTURER: Timex of Portugal.

AVAILABILITY: This systems is available as the ZEBRA Disk Drive Starter System Catalog #C500 from ZEBRA SYSTEMS, Inc., 78-06 Jamaica Ave, Woodhaven, NY 11421. (718)296-2385.

REQUIREMENTS: TS2068.

SUGGESTED RETAIL: \$350.00

I finally got my Disk Drive. After a wait of almost two months, it arrived by UPS in a big box. Of course, it was partly my fault for ordering the thing during the month of vacation that the factory in Portugal always takes during the summer. Anyway, it comes in four parts: three are as large as a disk drive and the other one is a good bit smaller. One of the large cases does contain the disk drive, one is the power supply and the last is the "controller". They are all made to match and form a rather handsome line directly behind my TS2068. the smaller package is the "interface" and plugs behind my TS2068. The smaller package is the "interface" and plugs behind the TS2068. Not directly into the 2068, however, because it needs Spectrum pin arrangement so you have to have a "line unscrambler" circuit board between the computer and the interface. Zebra Systems supplies a "T" connector that has the 2068 configuration out the side and Spectrum configuration out the back. It should be noted that the computer is operating as a 2068 and not as a Spectrum so you still have STICK, FREE, FN, etc.

The disk power supply has a switch

on the back and it is turned on just before powering up the computer. Placing the 3" disk into the drive produces a solid click and the little red LED start blinking. When the computer is turned on, three copyright messages appear: one for Sinclair, one for Timex and one for TOS, Timex Operating System I think.

It works really well. Programs or Code or Screens or whatever are SAVED by using SAVE \* "nam". The "\*" tells the systems you are refering to the disk. The tape port is still there if you want it. Disks can be divided into directories to hold programs with common characteristics. That is the GAMES directory might hold several game programs. UTIL might hold several utility programs. The structure is up to you. Programs LOAD like a flash. CAT is catalog and lists all the program in a directory. You move between directories on the same disk with GOTO \* "directory". MOVE \* copies a program. LET \* renames a file while ERASE \* wipes it out.

There are two RS232 ports which are driven by software supplied on the DEMO disk. Also there are programs to duplicate disks, drive serial printers and modems, dump code to the screen, and others. One feature I really like is the reset button on the controller, which rescues the disk system if it gets hung up without initializing the computer, thus it does not destroy a program in active memory.

The only drawback I have run across so far is the fact that if you are not in the right directory the computer will tell you a program does not exist. You must get into the right directory and there it is. So far as I can determine, the disk system uses no active memory. The controller has its own CPU and RAM and any program that worked on the computer alone should run with disk drive attached. An added feature we didn't have before is the provision to use random access and sequential files. The manual is clear and concise and easy to follow. If you

can afford the price the disk system is just what you need.

EDITOR'S NOTE: It should be mentioned that the system uses 3" floppy disks. These disks are not readily available in the U. S. at this time. They should become more popular in the near future as the Amstrad 128K PC from the UK has recently been introduced as well as plans for a 3" disk drive for the Sinclair QL are in the works. In the mean time 3" disks are available from Zebra Systems for \$39.95/10. They are also available from Curry Computers as well as other dealers.

QTS

### Making 2068 Back-Ups on the A & J Mikrodrive by Eben Brown

Using Thomas Woods 2068 Profile has proven to be the most convenient data base for our supplier and media contacts. Using it with our 2068 Mikrodrive (same as A & J Microdrive), has further enhanced it's utility with extra speed and reliability in saving and loading. I did, initially, have some misgivings about the Mikrodrive versions because there were no easy instructions for making back-ups. I've since figured a convenient method myself and thought it would be a good idea to share my method with others.

LOAD the Mikrodrive version of 2068 Profile from cassette and configure it as per instructions. (If you plan to use the internal mikrodrive printer port, you'll need a patch tape from us which we'll supply for \$5 to cover costs). This will give you one blank copy of Mikrodrive profile. Now, to make back-ups, you'll need to configure a re-usable loader. With no wafer in the Mikrodrive, LOAD the Mikrodrive version from cassette once again. You should get an error report after the loader has loaded. LIST the Loader program to your screen. Now, DELETE lines 1000-2000 from the Loader program.

Next, FORMAT a couple of 5-10 foot

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wafers using the SAVE "1,pfile" LINE 1: VERIFY "pfile". This saves and verifies an auto-run version of the loader to file 1 of each wafer. You now have a set of wafers that are ready to back-up Profile and it's data.

To use these back-ups, you start a file with your original empty Mikrodrive version of Profile. When it's time to SAVE your work. You remove the original wafer and insert one of your prepared wafers. Since the SAVE goes to files 2 and 3, your Profile and data will be readily saved and verified. To make a back-up copy, just SAVE again onto another prepared wafer.

NOTE: Besides speed, the 2068 Mikrodrive should be consistantly reliable. If you have frequent tape errors, there is something wrong. After a year of no problems, mine started having frequent tape errors. I used a swab and the cleaning solvent from our computer maintenance kit to clean the head and rollers and the drive returned to it's previous reliability.

I hope this back-up procedure is helpful to your readers. If any are confused or have questions, they're welcome to call or write for help. Write Eben Brown at E. Arthur Brown Company, 3404 Pawnee Dr, Alexandria, MN 56308 or call at (612)762-8847.

QTS



REVIEW: MSCRIPT  
by Thomas Beutel

MANUFACTURER:

Zebra Systems  
78-06 Jamaica Ave  
Woodhaven, NY 11421  
(718)296-2385

REQUIREMENTS: TS2068 with AERCO or  
TASMAN Centronics Parallel Interface  
to connect with full sized printer.

SUGGESTED RETAIL: \$24.95

MSCRIPT is a versatile and easy to use word processor for the TS2068. Unlike its BASIC competitors, it is written in machine code so there is no agonizing key stroke delay or print-out delay. MSCRIPT works with the AERCO and TASMAN interfaces, and MSCRIPT is also written for many other machines, such as the TRS-80 and IBM PC, so that you won't need to relearn the commands of another word processor when you move to those machines.

MSCRIPT comes with a 75 page user manual and a tape containing MSCRIPT on one side and sample text files on the other side. The user's manual is the same as those for the other machines, but with pages inserted for instructions specific to the TS2068. It describes the operation of MSCRIPT in a tutorial format, and it then has a glossary, examples on how to send MSCRIPT files with MTERM, and how to set up embedded printer codes.

The first thing to learn with MSCRIPT is where the <function> and <command> keys are. These are actually key combinations that must be pressed to access a certain function. I found that pressing three keys at once is a tedious affair, but it is not impossible. You can access a help screen by pressing <function>-H, to show what functions are available.

Some of MSCRIPT's features include full cursor movement, search and replace and block move. I might point out that the TS2068's delete key (shift-0) does not work. To delete you back up using the cursor

key and then type over the incorrect letters. This feature makes the computer more familiar to typists.

You can format your text in just about any way you want. You can specify margins and spacings, center and justify lines, set indents and underline text. MSCRIPT can also generate headers, footers and page numbers.

With MSCRIPT you can save and load files on your cassette, but you must know the name of the file you are going to load in. You can't load in the 'empty string' as you can with normal programs and you can't have it search through a tape of files. The best advice here is to have one file per tape side and have it correctly labeled.

Overall, I give MSCRIPT a very good rating. Speed and ease of use are excellent. My only complaints would be the lack of the delete key and the limited loading capabilities mentioned above.

QTS

Timex / Sinclair Owners...

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TS2068 LabelMaker  
by Bill Ferrebee

I have been one of those "Sinclair Junkies" since almost the beginning. Yes...I took the abuse..."You have one of those toys!?"..."I thought that was a high-tech doorstop!"...and so on.

But, you know as well as I do that you wouldn't trade in your T/S for anything. Our motley crew of tinkerers constantly come up with new and exciting ways to enjoy our "toys".

With great publications such as QTS, we will never run out of places to share our newfound knowledge, or gain insight on how to even better use "the power within our reach".

With this in mind, I would like to give a gift to you, "the believers". LabelMaker is a short program that I wrote to fulfill a need I had for a way to make nice looking cassette labels for my software collection.

LabelMaker will work with any full-size printer interface you may have (AERCO, Tasman, A&J, Oliger) because you will use the print driver software provided with your interface to drive this program.

First, load the driver software for your interface and save it to a blank tape. DO NOT REWIND THE TAPE!

Next, type in the simple program below. SAVE this on the tape immediately following the driver. Make sure to use the LINE command on the SAVE so that it will auto-run.

That's all there is to it! Just one note...If you plan on using double quotes (2), such as LOAD "", you will need to input TWICE the amount you will want printed...LOAD "" will need to be inputted as LOAD """".

I have found a great place to buy form feed cassette labels to use with your full size printer. Custom Tape Loaders (8135 Cox's Drive, Suite 209, Portage, MI 49081) has them

available in 4 colors (White-Yellow-Red-Blue) for \$1.60 + shipping per 100. Check out their prices on blank computer tapes, too.

I hope you get as much use out of this program as I did. Let me know if you make any modifications to this program.

```
10 CLS : INPUT "Program Title:
";a$
12 IF LEN a$>32 THEN GO TO 10
14 PRINT TAB 16-(LEN a$/2);a$
20 INPUT "Line #2 Info:";b$
22 IF LEN b$>32 THEN GO TO 20
24 PRINT TAB 16-(LEN b$/2);b$
30 INPUT "Line #3 Info:";c$
32 IF LEN c$>32 THEN GO TO 30
34 PRINT TAB 16-(LEN c$/2);c$
38 PRINT : PRINT : PRINT : PRI
NT : PRINT
40 INPUT "Bottom Line:";d$
42 IF LEN d$>32 THEN GO TO 40
44 PRINT TAB 16-(LEN d$/2);d$
50 PRINT AT 21,8; FLASH 1;"Cor
rect? (/n)"
52 IF INKEY$="" THEN GO TO 52
54 IF INKEY$="n" THEN GO TO 10
100 PRINT AT 21,8;"
": INPUT "Number of copies :";x
: REM 14 spaces between quotes
110 FOR i=1 TO x
120 LPRINT TAB 16-(LEN a$/2);a$
122 LPRINT TAB 16-(LEN b$/2);b$
124 LPRINT TAB 16-(LEN c$/2);c$
126 LPRINT : LPRINT : LPRINT :
LPRINT : LPRINT
128 LPRINT TAB 16-(LEN d$/2);d$
130 LPRINT : LPRINT
132 NEXT i
140 INPUT "More? (y/n)";x$
142 IF x$="y" THEN GO TO 100
150 INPUT "Another Title? (y/n)
";x$
152 IF x$="y" THEN GO TO 10
160 CLS : PRINT AT 10,8;"[Work
Completed]": STOP
```

-----

If you wish to contact Bill please write him at Mountaineer Software, 749 Hill St #6, Parkersburg, WV 26104.



Telecommunications  
by Bill Johnson

A letter that we received from E. F. Davis, see "Dear QTS:" this issue, gave me the idea for this column. Since many of you are thinking of trying telecommunications this column is meant to get you started.

As was mentioned in the last issue the modem plugs in to the expansion port at the back of the computer. This is the same spot where the printer or printer interface plugs in. You will first plug in the modem and the printer will plug in right after that. Once you are plugged in the telephone connection is made. With the Westridge 2050 modem you will need a modular phone connection, this is the now normal connection used in phones. If you have an older phone line you may have to buy an adapter available at many stores, it should run you a couple of bucks. Once the phone connection is made you simply plug the modem in using the AC Adaptor provided.

Now that you are all hooked-up you are ready to use your modem. You must first load your terminal software which lets your computer control your modem and turns your computer into a terminal. So now you want to make a phone call. With the Westridge 2050 modem you can dial directly from the computer. It is simple, all you do is go to the Auto-Dial selection on the main menu and type in the phone number you want to reach. You can actually hear the modem dialing your phone. The Westridge dials using the pulse method of dialing so you do not need a touch tone telephone line.

If the line is busy the computer will tell you so. When the connection is made the computer will tell you so. You may have to change the pre-set parameters depending on the service you are connecting with. The software provided should be set for the common parameters and this should give you little problem.

How much does it cost to

telecommunicate? You pay the telephone company as if you are talking on the telephone. Depending on the service you connect with there may also be fees. COMPUSERVE charges you \$6.00 per hour plus an additional charges for extra service. This is billed directly to your VISA/MASTERCARD weekly. You can also connect with many free BBS's and you will be charged nothing, check with a local computer club for numbers to call in your local area. Most of the big services, such as COMPUSERVE and THE SOURCE have many numbers to call throughout each state. You should be able to connect to these service through a local phone call. If you can't give them a call for the most economical method to call them.

As you can see the UPLOAD/DOWNLOAD function of the more advanced terminal software can save you quite a bit of time in connections. Say that you want to send a letter to a friend through COMPUSERVE but don't want to spend a half hour connected to COMPUSERVE. Without calling COMPUSERVE you can type in the letter using the terminal software and then after you have written it call COMPUSERVE and UPLOAD the message into the system. It should take you 5 minutes of connect time rather than 35 minutes of telephone and COMPUSERVE time. More next time...

QTS

\* \* LATE NEWS \* \*

TIMEX 2050 MODEM LIQUIDATION-\$69.95  
E. Arthur Brown Company has bought out the remaining inventory of original Westridge 2050 Modems and is offering them at a price of \$69.95. Only 160 units are available. These originally sold for \$119.00.  
HACKER'S HANDBOOK Available February only \$12.95. BATTERY RAM CARTRIDGE FOR TS2068 only \$109.95. See NEWS page 15 for E. Arthur Brown Company's address and telephone number. Information from press release dated January 10, 1986.

# ONE MORE TIME: BIORHYTHM

by Chuck Dawson

EDITOR'S NOTE: We goofed so badly in the FALL 1985 issue when we printed the BIORHYTHM program that we decided to run the program again.

The program as it appears here is for the TS1000 with no extra memory added. In order to get the program into 2K of memory the following statements must be entered without line numbers before using the command goto 1 to SAVE the program:

If you have a TS1000 (2K):

```
DIM Z(12)
LET Z(2)=31
LET Z(3)=59
LET Z(4)=90
LET Z(5)=120
LET Z(6)=151
LET Z(7)=181
LET Z(8)=212
LET Z(9)=243
LET Z(10)=273
LET Z(11)=304
LET Z(12)=334
```

This program can also be used with the TS1000 (16K) either by using the same procedure above or by putting the above in the program with LINE numbers.

The program can also be used on the TS2068 by adding or changing the following lines:

```
10 DIM Z(12)
20 FOR I=1 TO 12: READ X: LET
Z(i)=X: NEXT I
400 FOR N=0 TO 63
410 PLOT N,88+80*SIN (N/128*PI)
420 PLOT N,86
440 LET N=N/24
460 DATA 0,31,59,90,120,151,181
,212,243,273,304,334
```

Here is the program one more time. We are very sorry for the errors when we first ran this in the FALL 1985 issue.

QTS

```
10 SAVE "BIORHYTHM"
20 POKE 16513,234
30 LET L=NOT PI
40 PRINT TAB 13;"M /D /Y"
50 PRINT "ENTER BIRTHDATE"
60 GOTO 160
70 INPUT M
80 IF M>12 THEN GOTO 70
90 PRINT "
M:"/"
100 INPUT D
110 IF D>31 THEN GOTO 100
120 PRINT D;" /";
130 INPUT Y
140 PRINT Y
150 RETURN
160 GOSUB 70
170 LET N=M
180 LET E=D
190 LET X=Y
200 PRINT AT 6,NOT PI;"ENTER TO
DAYS DATE"
210 GOSUB 70
220 IF Y<X THEN LET Y=Y+100
230 FOR I=X TO Y-SGN PI
240 LET L=L+365
250 IF INT (I/100)*100=I THEN I
F INT (I/400)*400<I THEN GOTO 27
0
260 IF INT (I/4)*4=I THEN LET L
=L+SGN PI
270 NEXT I
280 IF Y=X THEN LET L=365-L
290 IF INT (X/100)*100=X THEN I
F INT (X/400)*400<X THEN GOTO 31
0
300 IF INT (X/4)*4=X THEN IF N>
2 THEN LET L=L-SGN PI
310 IF INT (Y/100)*100=Y THEN I
F INT (Y/400)*400<Y THEN GOTO 33
0
320 IF INT (Y/4)*4=Y THEN IF M>
2 THEN LET L=L+1
330 LET L=L-Z(N)-E
340 LET L=L+Z(M)+D
350 IF Y=X THEN LET L=L-365
360 LET E=L/28-INT (L/28)
370 LET Y=L/23-INT (L/23)
380 LET I=L/33-INT (L/33)
390 CLS
400 FOR N=NOT PI TO 63
410 PLOT N,22+20*SIN (N/32*PI)
420 PLOT N,21
430 NEXT N
440 LET N=N/6
450 PRINT AT SIN (E*(PI+PI))*N-
N,E*32;"E";AT SIN (Y*(PI+PI))*N-
N,Y*32;"Y";AT SIN (I*(PI+PI))*N-
N,I*32;"I"
```

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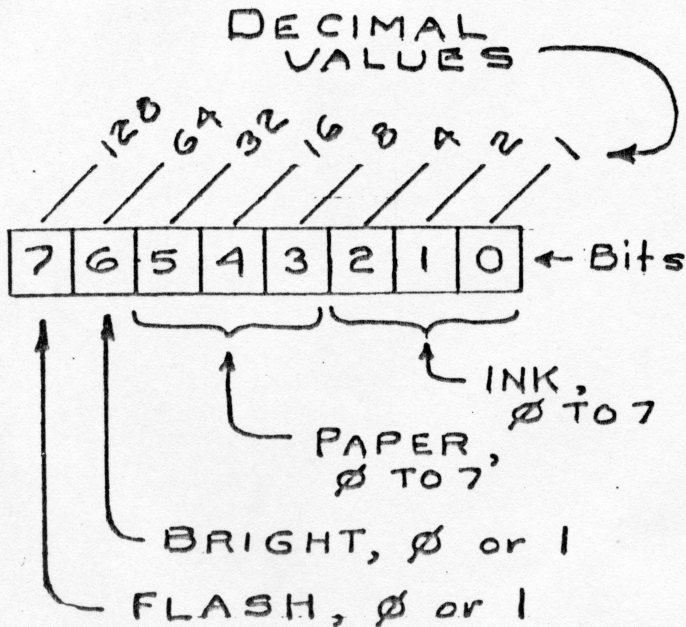
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WMJ DATA SYSTEMS  
4 Butterfly Drive  
Hauppauge, NY 11788

TS2068 BASIC TUTOR  
by Warren Fricke

EDITOR'S NOTE: The TS2068 Basic Tutor column which appeared in the FALL 1985 issue of QTS contained an error. The illustration appearing on page 10 should be replaced with the following:



## AN ATTRIBUTE BYTE

This is the third article of a series that discusses the various means that the basic language of the TS2068 computer provides for identifying a character in the PRINT POSITION. One or more of these methods is employed in almost every game program. This series will describe the various methods and show how they may be used.

Print position has been defined as that particular block of the 32 x 24 blocks of the screen where the very next character will be printed. In the Summer 1985 issue, we showed how SCREEN\$ is used to identify a character, but learned that it had several limitations in this respect. In the Fall 1985 issue we learned that the ATTRIBUTES can be used in many circumstances to do this.

There are several other methods at our disposal, each having its own

ideal conditions for use, depending upon how the programmer has arranged the game program. Our present concern is to demonstrate how the various methods work, using in each case essentially the same short routine of four-direction movement that was introduced at the beginning of this series. In this issue we will look at one of the system addresses that holds data having a bearing on the character in the print position. Then in a future issue of QuarterS, we will present several short game programs, each more suitable for one method of print detection than perhaps another.

### PRINT POSITION using SYSTEM ADDRESS 23684/5

System address 23684/5 can be used to read the PRINT POSITION in almost the same fashion that address 16398/9 did on the TS1000. There is one major difference. On the TS1000 the system address held another address that contained the CODE of the character in the PRINT POSITION. On the TS2068 the system address holds another address that contains the VALUE OF THE TOP BYTE of the character in the PRINT POSITION. Any kind of a character can be read but we can identify only the upper one-eighth of it.

```

2 INPUT b$
4 FOR n=1 TO 35
6 PRINT AT 21*AND,31*AND;b$
8 NEXT n
10 LET L=10: LET C=15
30 LET LL=L: LET CC=C
40 LET L=L+(INKEY$="6" AND L<2)
1) -(INKEY$="7" AND L>0)
50 LET C=C+(INKEY$="8" AND C<3)
1) -(INKEY$="5" AND C>0)
60 PRINT AT L,C;
70 IF PEEK (PEEK 23684+256*PEE
K 23685)=60 THEN BEEP .05,25
80 PRINT "■"
90 PRINT AT LL,CC;" " AND (LL<
>L OR CC<>C)
100 GO TO 30

```

FIGURE 1



## NEWS

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See page 11.

**G. D. Clifford**  
13910 Halldale Ave  
Gardena, CA 90249  
(213)516-6648

**T/S 2050 TELECOMMUNICATION MODEM CARD:** For the handy T/Ser. These modem cards come uncased and without power supply. \$25.00.

**MemoNotes**  
c/o Thomas B. Woods  
PO Box 64  
Jefferson, NH 03583

**THE SYNCWARE GROUP** announced the publication of "MemoNotes," the Newsletter for Memotext and Memocalc users. Will appear 4 times per year, starting with Summer, 1985 issue. It contains information for efficient use of these programs, as well as technically oriented articles for their improvement and adaptation. \$13.95 per year. The Summer 1985 issue was 10 pages.

TELL THEM YOU SAW THEM IN QTS

FIGURE 1 is our familiar test routine rearranged to show how this technique might be used. Note the construction of Line 70. We must first PEEK the system address 23684/5 to find out the address that currently contains the value in its upper byte. Hence the PEEK. Since the address that contains this top byte is constantly changing, we cannot PEEK it until we are ready to use the value that is in it. Therefore, all of this activity is in Line 70, the one following the print position line.

And, of course, we can always combine this method with ATTR and/or SCREEN\$ for even finer distinctions.

QTS

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See September 1984 issue of 73 for TIMEX/RITTY article

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---

T-S HORIZONS  
2002 Summit St  
Portsmouth, OH 45662

T-S HORIZONS has been running late in getting issues out to their subscribers. Several QTS subscribers have written to us about this problem. Some have had to wait about 5 or 6 months to get the first issue. T-S Horizons is an excellent T/S only publication but we thought you should know about this before you send in a subscription.

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**INDIANA TS/ZX USERS:** Let's start a users group. Write to Frank Davis, 513 East Main St, Peru, IN 46970. Open to beginners as well as pros, ZX80, 81; TS1000, TS1500, ZX Spectrum, and TS2068 users.

---

**COMPUSA USERS UNITE:** If you are using a Compusa FDC-100 DOS on your TS1000, 1500, or ZX81 you are the person I am looking for. I am trying to get a Compusa Users Support System (C.U.S.S.) started. Contact: Ed Grey, PO Box 2186, Inglewood, CA 90305.

---

**10 SPECTACULAR SPECTRUM TEXT ADVENTURES.** Details in Last Issue or Send SASE for FREE CATALOG. COMPUQUEST T/S Dept Box-492 St Croix Falls, WI 54024.

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**HAVE PLANS FOR RS232 PORT(TS1000).** Send 90 cents plus stamps if you would like copies.

**HELP:** Have plans for power card (T/S User Vol. 1 #7), but not accurate on where what connects where. Would also like info on how to complete it plus where to obtain a latch card or interface with 8-bit output. Dennis Harlow, 429 Colony Dr, Whiteland, IN 46184.

---

**NEED HELP:** I lost the instructions that came with the Memotech 64K RAM pack for my ZX81. I would really appreciate it if someone would send me a copy of their pamphlet so I can POKE that other 48K out of hiding. Thanks! Steve Edgar, 10420 Ponderosa Dr, Sumner, WA 98390.



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Address: \_\_\_\_\_

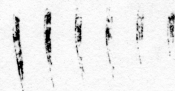
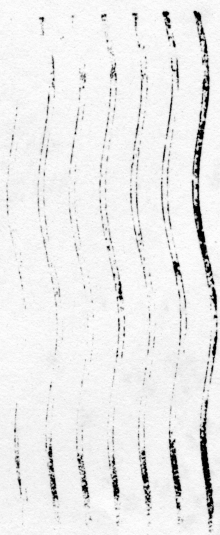
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Quarters

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